Claims 18, 19 and 22 were rejected under 35 USC 103(a) as being unpatentable over Kuehnle et al. in view of GB 1,264,494, in further view of Silvis et al. (U.S. Patent No. 5,629,050). Claims 11-25 are herein canceled and new claims 26-45 have been added which are patentable over the combination of these prior art references.

Kuehnle et al. discloses electrophotographically forming an image on the photoconductive surface of an image carrier. The toned image is dried, or permitted to dry, and is then transferred by contact transfer of the toned image to an image receptor which has a tackified thermoplastic surface. Kuehnle et al. does not teach electrophotographically printing an image directly to the thermoplastic surface.

GB 1,264,494 discloses use of a toner comprising a pigment, a thermoplastic binder and a third substance having a dielectric loss factor substantially higher than that of the pigment and binder. The toner is formed on a thermoplastic foil substrate and is subjected to a high frequency electric field to melt the third substance which then dissolves the binder and enables the binder to bind the pigment to the substrate. GB 1,264,494 discusses the impossibility of use of a thermoplastic binder without the solvent.

Silvis et al. discloses the fabrication of thermoplastic composites by thermal processing techniques.

The newly drafted claims are patentable over the combination of Kuehnle et al., GB 1,264,494 and Silvis et al. for the following reasons.

Independent claim 26 requires that the toner consist only of a coloring agent and thermoplastic toner particles. This requirement is not found in the prior art references. Specifically, GB 1,264,494 requires that its toner comprise at least a pigment, a thermoplastic binder and the third substance which acts as a solvent for the binder. GB 1,264,494 discloses that no thermoplastic material could be used in its method without use of a inorganic solvent (page 1, lines 24-38; 63-75). Neither Kuehnle et al. nor Silvis et al. disclose the claimed method of using such a toner.

Independent claims 39 and 43 disclose heating both the thermoplastic material and the toner so that each reaches a reactive state. This requirement is not disclosed by the combination of the prior art references.

Finally, the use of the same thermoplastic material for layer and toner particles is not an obvious variation of the combination of prior art references. GB 1,264,494 requires a solvent to be used to allow the thermoplastic binder to be melted. If the same thermoplastic material were used on the substrate layer an additional solvent would be required on the surface if the surface were to be melted. Containing a solvent on the surface is not contemplated and is not practical. Neither Kuehnle et al. nor Silvis et al. disclose use of thermoplastic materials in the toner. Therefore any combination of the references does not render obvious claims requiring the use of the same thermoplastic materials.

Applicants believe that all claims as amended are in proper form for allowance and early favorable action is requested. The Examiner is invited to call the undersigned attorney if that would be helpful in facilitating resolution of any issues which might remain.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: BOX NO FEE AMENDMENT, Assistant Commissioner for Patents, Washington, DC 20231 on January 23, 2002.

Nancy J. Burnett

Marked-up Version to Show Changes Made

Add new claims 26-45 as follows:

--26. A method of printing on a thermoplastic material comprising the steps of:

- electrographically printing a toner consisting of a coloring agent and thermoplastic toner particles onto the thermoplastic material;
- bringing the thermoplastic material into a material reactive state; and
- hardening the thermoplastic material thereby establishing a bond between the toner and the thermoplastic material.--

--27. The method of claim 26 wherein only a surface portion of the thermoplastic material is brought into the material reactive state.--

--28. The method of claim 26 wherein the toner is electrostatically printed onto the thermoplastic material.--

--29. The method of claim 26 wherein the thermoplastic material is heat-softened in the material reactive state.--

--30. The method of claim 26 wherein the thermoplastic material is brought to the material reactive state by thermal energy.--

--31. The method of claim 26 further comprising the step of bringing the toner into a toner reactive state.--

--32. The method of claim 31 wherein the toner and thermoplastic material are fluid in their respective reactive states.--

--33. The method of claim 31 wherein the toner is heated by the thermoplastic material upon contact with the thermoplastic material to reach the toner reactive state.--

--34. The method of claim 31 wherein the toner is heated to the toner reactive state and the thermoplastic material is brought to the material reactive state through contact with the toner.--

--35. The method of claim 26 wherein the thermoplastic material is hardened by cooling the thermoplastic material and the toner.--

--36. The method of claim 26 wherein the thermoplastic material has a surface on which the toner is printed and the toner sinks into the surface to form a smooth surface structure.--

--37. The method of claim 26 wherein the thermoplastic material has a surface on which the toner is printed and the thermoplastic toner particles are of the same thermoplastic material as the surface.--

--38. The method of claim 26 wherein the thermoplastic material has a surface on which the toner is printed, the method further comprising the steps of:

- processing the thermoplastic material in a heated molding machine;
- applying heat to at least the surface of the thermoplastic material to produce the reactive state;
- maintaining at least the surface of the thermoplastic material in the reactive state; and
- printing the toner onto the surface.--

--39. A method of printing on a thermoplastic material comprising the steps of:

- heating a toner comprised of a coloring agent and thermoplastic toner particles to a toner reactive state;
- heating the thermoplastic material to a material reactive state;
- electrographically printing the toner onto the thermoplastic material; and

- hardening the thermoplastic material thereby establishing a bond between the toner and the thermoplastic material.--

--40. The method of claim 39 wherein the toner is heated by contact with the thermoplastic material.--

--41. The method of claim 39 wherein the thermoplastic material is heated by contact with the toner.--

--42. The method of claim 39 wherein the thermoplastic toner particles and the thermoplastic material are of the same material.--

--43. A method of printing on a thermoplastic material comprising the steps of:

- heating the thermoplastic material to a material reactive state;
- electrographically printing a toner onto the thermoplastic material such that the toner is heated by the thermoplastic material and reaches a toner reactive state; and
- hardening the thermoplastic material thereby establishing a bond between the toner and the thermoplastic material.--

--44. The method of claim 43 wherein the toner is comprised of a coloring agent and thermoplastic toner particles.--

--45. The method of claim 43 wherein the toner and the thermoplastic material, when in their respective reactive states, react with one another to establish the bond.--